BISS Biodiversity Information Science and Standards

Biodiversity Information Science and Standards 3: e37209
doi: 10.3897/biss.3.37209

OPEN ACCESS

Conference Abstract

The Value of a Deep-Sea Collection of the Azores (NE Atlantic Ocean): Marine invertebrate biodiversity in an era of global environmental change

Íris Sampaio[‡,§,|], Telmo Morato[‡,§,¶], Filipe M Porteiro[‡,#], Cristina Gutiérrez-Zárate[‡], Gerald Taranto[‡,§,¶], Christopher Pham[‡,§,¶], João Gonçalves[¤], Marina Carreiro-Silva[‡,§,¶]

‡ IMAR—University of the Azores, Rua Prof. Dr. Frederico Machado 9901-862, Horta, Portugal
§ MARE—Marine and Environmental Sciences Centre of the Institute of Marine Research, Horta, Portugal
| Senckenberg am Meer, Abteilung Meeresforschung, Südstrand 40, 26382, Wilhelmshaven, Germany
¶ OKEANOS Research Unit, Faculty of Science and Technology, University of the Azores, 9901-862 , Horta, Portugal
# Regional Directorate for Sea Affairs (DRAM), Regional Secretariat for the Sea, Science and Technology, Azores Government, Horta, Portugal
¤ OKEANOS Research Unit, Faculty of Science and Technology, University of the Azores, 9901-862, Horta, Portugal

Corresponding author: Íris Sampaio (irisfs@gmail.com)

Received: 12 Jun 2019 | Published: 19 Jun 2019

Citation: Sampaio Í, Morato T, Porteiro F, Gutiérrez-Zárate C, Taranto G, Pham C, Gonçalves J, Carreiro-Silva M (2019) The Value of a Deep-Sea Collection of the Azores (NE Atlantic Ocean): Marine invertebrate biodiversity in an era of global environmental change. Biodiversity Information Science and Standards 3: e37209. https://doi.org/10.3897/biss.3.37209

Abstract

The deep ocean is the largest and least explored biome with the highest richness of species and phylogenetic biodiversity on Earth. The high costs of using sophisticated technological means to access deep-sea ecosystems gives an inestimable value to specimens collected in these environments. Azorean scientists have long started collaborating with fishermen to collect deep-sea marine invertebrate fauna accidentally captured during fishing activities, thus obtaining deep-sea organisms opportunistically. Specimens have been stored and catalogued at the Department of Oceanography and Fisheries – University of the Azores' Marine Biological Reference Collection (COLETA) since 2006. The collection has been continuously growing through oceanographic cruises and fisheries observer programs in the framework of several national and international

© Sampaio Í et al. This is an open access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

collaborations. Currently, COLETA has 14367 specimens and samples corresponding to 10827 databased entries representing mostly corals (3415) and sponges (1941) of the deep sea (Fig. 1), for which data are available until 2012 (Institute of Marine Research (IMAR - Azores), Portugal and Department of Oceanography and Fisheries (DOP) - UAC, Portugal 2015). Specimens and associated metadata have contributed for the the taxonomy, population genetics and life history (age, growth, reproduction) of corals and other organisms. The homonym COLETA database, besides the taxonomic identification and photography of the specimen, has metadata including geographic location, depth, and the method of collection (e.g. survey, fishing). Thus, COLETA has also been instrumental in the mapping of distribution of biodiversity and vulnerable marine ecosystems such as coral gardens, sponge grounds, hidrarian gardens and sea pen fields in the Azores Exclusive Economic Zone (EEZ). Efforts have been made to make COLETA compatible with other databases, such as the database of historical records of cold-water coral occurrences in the Azores (e.g. Prince Albert of Monaco Campaigns in the 19th century) and other fisheries databases, in order to maximize its potential to study trends in biodiversity loss related to climate change and fisheries impacts. Underwater images of live specimens from video surveys have also been cross-referenced with specimens stored at COLETA in an effort to join taxonomists and ecologists in the characterization of new habitats.

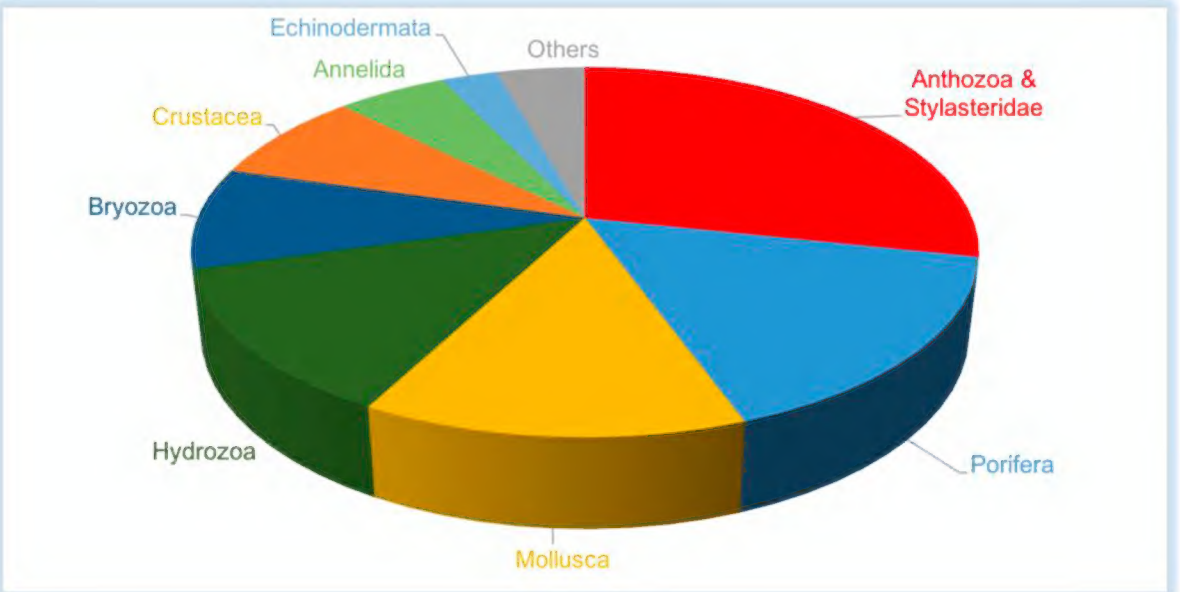

Figure 1.

COLETA database on marine invertebrates of the Azorean deep sea.

Curated collections and datasets based on vouchered records, which can be continuously consulted, are essential to study deep-sea biodiversity. A continuously growing collection has also the potential of adding a time frame to the study of the impact of climate change, fishing and pollution on the deep-sea. In an era of biodiversity loss, COLETA represents a good example of where physical specimens and associated metadata databases can be combined to research and discover species, to achieve ecosystem conservation and guide marine spatial planning.

Keywords

collection, deep sea, invertebrates, marine biodiversity, vulnerable marine ecosystems

Presenting author

Íris Sampaio

Presented at

Biodiversity_Next 2019

References

- Institute of Marine Research (IMAR - Azores), Portugal, Department of Oceanography and Fisheries (DOP) - UAC, Portugal (2015) COLETA - IMAR/DOP-Uac reference collection from 1977 to 2012. URL: https://doi.org/10.14284/23